

intended to mean the same embodiment or implementation unless described as such. Furthermore, the terms “first,” “second,” “third,” “fourth,” etc. as used herein are meant as labels to distinguish among different elements and may not necessarily have an ordinal meaning according to their numerical designation.

What is claimed is:

1. A method, comprising:

sending, by a server to each of a plurality of client devices, initializing information at a start of a task in a client application running on each of the plurality of client devices;

receiving, by the server, an input message from one of the plurality of client devices, wherein the input message is generated from an interaction with the task in the client application;

generating, by a computer processing device of the server, updated information for the task in the client application based on the received input message; and

sending, by the server, the updated information to each of the plurality of client devices while the task in the client application is running to maintain synchronism between the server and the plurality of client devices for the task.

2. The method of claim 1, wherein the client application running on each of the plurality of client devices is a same version of a deterministic client application, further comprising sending with the initializing information, by the server during an initiation of the deterministic client application, setup data for the initiation of the deterministic client application to each of the plurality of client devices.

3. The method of claim 1, wherein the input message and the updated information comprise a frame identifier corresponding to the start of the task, and wherein the plurality of client devices and the server each maintain a synchronized copy of a current frame number of the client application.

4. The method of claim 3, wherein the frame identifier corresponds to a future number of the client application, further comprising delaying the sending of the updated information until the current frame number matches the frame identifier.

5. The method of claim 1, wherein the input message does not comprise a frame number corresponding to the start of the task, the method further comprising:

assigning a frame number to the start of the task; and

sending the frame number with the updated information to the plurality of client devices.

6. The method of claim 1, wherein two-way connections between the plurality of client devices and the server guarantee in-order delivery of all data in both directions.

7. The method of claim 1, wherein a first frame rate corresponding to execution logic on the server is slower than a second graphics refresh frame rate corresponding to the client application on the client devices.

8. The method of claim 1, wherein the updated information comprises an instruction to activate autonomous control for the one of the plurality of client devices, the method further comprising executing identical autonomous instructions on each of the plurality of client devices without communicating the autonomous instructions between the client devices and the server.

9. The method of claim 1, further comprising:

storing the updated information in a data store with other updated information corresponding to the client application; and

providing for display a replay of actions performed by the client application by executing instructions stored in the updated information.

10. The method of claim 9, further comprising:

analyzing the stored updated information to determine a client application feature of interest; and

providing a recommendation comprising the feature of interest to a client device for display.

11. The method of claim 1, wherein a connection between the one of the plurality of client devices and the server is interrupted for a period of time, the method further comprising:

continuing execution of the client application on the plurality of client devices during the period of time; and

sending, following a reconnection between the one of the plurality of client devices and the server, a message comprising setup data, a current frame number of the server, and a list of tasks that have been processed by the server.

12. The method of claim 1, wherein the input message comprises a request of a passive spectator client device.

13. A server system, comprising:

a memory to store initializing information; and

a computer processing device, operatively coupled to the memory, to:

send, to each of a plurality of client devices, the initializing information at a start of a task in a client application running on each of the plurality of client devices;

receive an input message from one of the plurality of client devices, wherein the input message is generated from an interaction with the task in the client application;

generate updated information for the task in the client application based on the received input message; and

send the updated information to each of the plurality of client devices while the task in the client application is running to maintain synchronism between the server and the plurality of client devices for the task.

14. The server system of claim 13, wherein the client application running on each of the plurality of client devices is a same version of a deterministic client application, further comprising sending with the initializing information, by the server during an initiation of the deterministic client application, setup data for the initiation of the deterministic client application to each of the plurality of client devices.

15. The server system of claim 13, wherein the initializing information and the updated information comprise a frame identifier corresponding to the start of the task, and wherein the plurality of client devices and the server each maintain a synchronized copy of a current frame number of the client application.

16. The server system of claim 13, wherein the updated information comprises an instruction to activate autonomous control for the one of the plurality of client devices, the computer processing device further to execute identical autonomous instructions on each of the plurality of client devices without communicating the autonomous instructions between the client devices and the server.